LA-UR-21-21644

Title: LANL Contributions to Bioscience Research

Author(s):   Del Mauro, Diana
                    Hengartner, Nicolas W.

Intended for: Frontiers in Science public event, Feb. 24
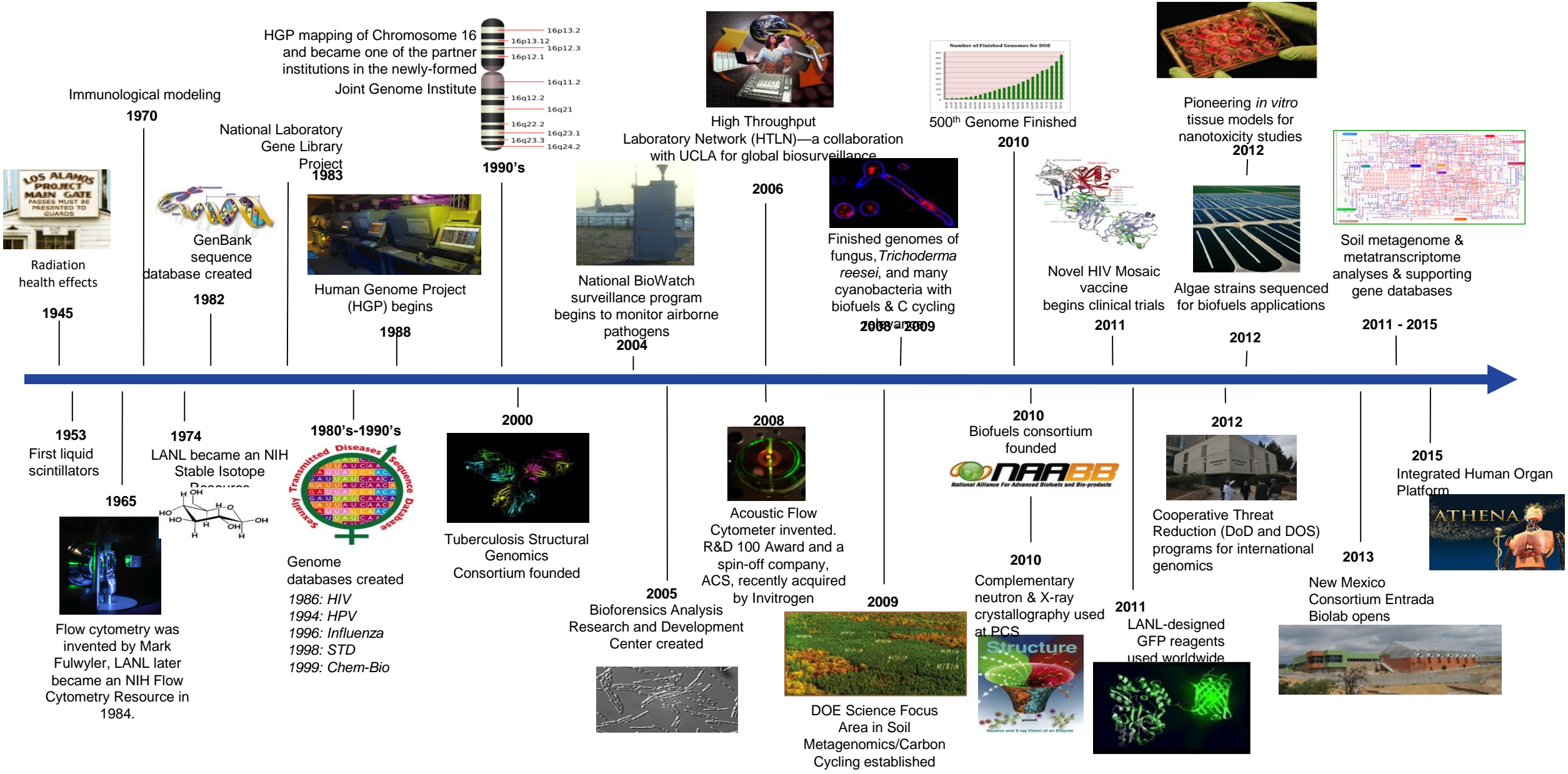
Issued: 2021-02-19

LANL Contributions to Bioscience Research

HGP mapping of Chromosome 16 and became one of the partner institutions in the newly-formed Joint Genome Institute
1990's

High Throughput Laboratory Network (HTLN)—a collaboration with UCLA for global biosurveillance
2006

500th Genome Finished
2010

Pioneering *in vitro* tissue models for nanotoxicity studies
2012

Immunological modeling
1970

National Laboratory Gene Library Project
1983

Finished genomes of fungus, *Trichoderma reesei*, and many cyanobacteria with biofuels & C cycling
2008/2009

Novel HIV Mosaic vaccine begins clinical trials
2011

Algae strains sequenced for biofuels applications
2012

Soil metagenome & metatranscriptome analyses & supporting gene databases
2011 - 2015

Radiation health effects
1945

GenBank sequence database created
1982

Human Genome Project (HGP) begins
1988

National BioWatch surveillance program begins to monitor airborne pathogens
2004

1953
First liquid scintillators

1974
LANL became an NIH Stable Isotope Resource

1980's-1990's
Genome databases created
1986: HIV
1994: HPV
1996: Influenza
1998: STD
1999: Chem-Bio

2000
Tuberculosis Structural Genomics Consortium founded

2008
Acoustic Flow Cytometer invented. R&D 100 Award and a spin-off company, ACS, recently acquired by Invitrogen

2010
Biofuels consortium founded
NAABB
National Alliance For Advanced Biofuels and Bio-products

2012
Cooperative Threat Reduction (DoD and DOS) programs for international genomics

2015
Integrated Human Organ Platform
ATHENA

1965
Flow cytometry was invented by Mark Fulwyler, LANL later became an NIH Flow Cytometry Resource in 1984.

2005
Bioforensics Analysis Research and Development Center created

2009
DOE Science Focus Area in Soil Metagenomics/Carbon Cycling established

2010
Complementary neutron & X-ray crystallography used at PCS

2011
LANL-designed GFP reagents used worldwide

2013
New Mexico Consortium Entrada Biolab opens
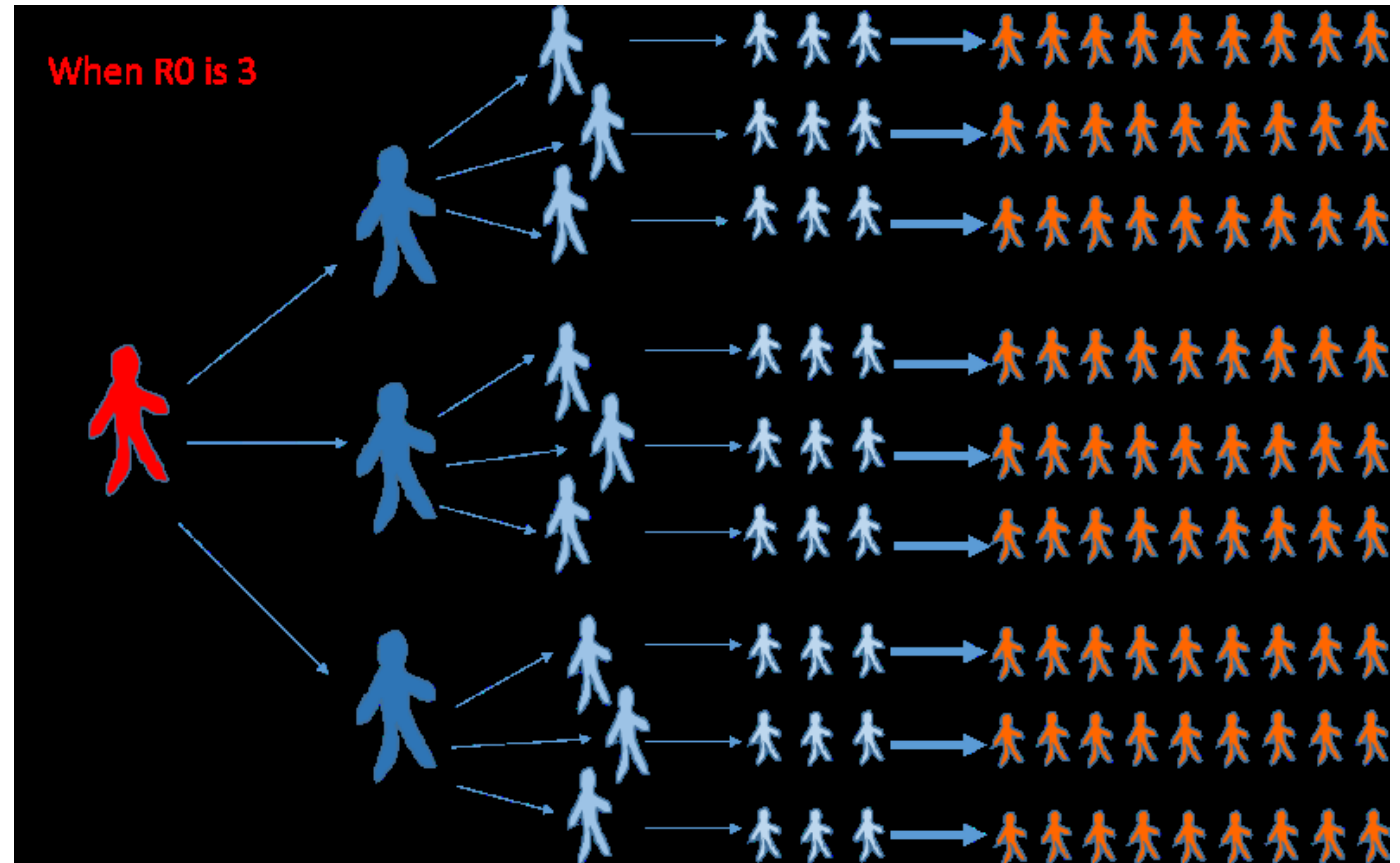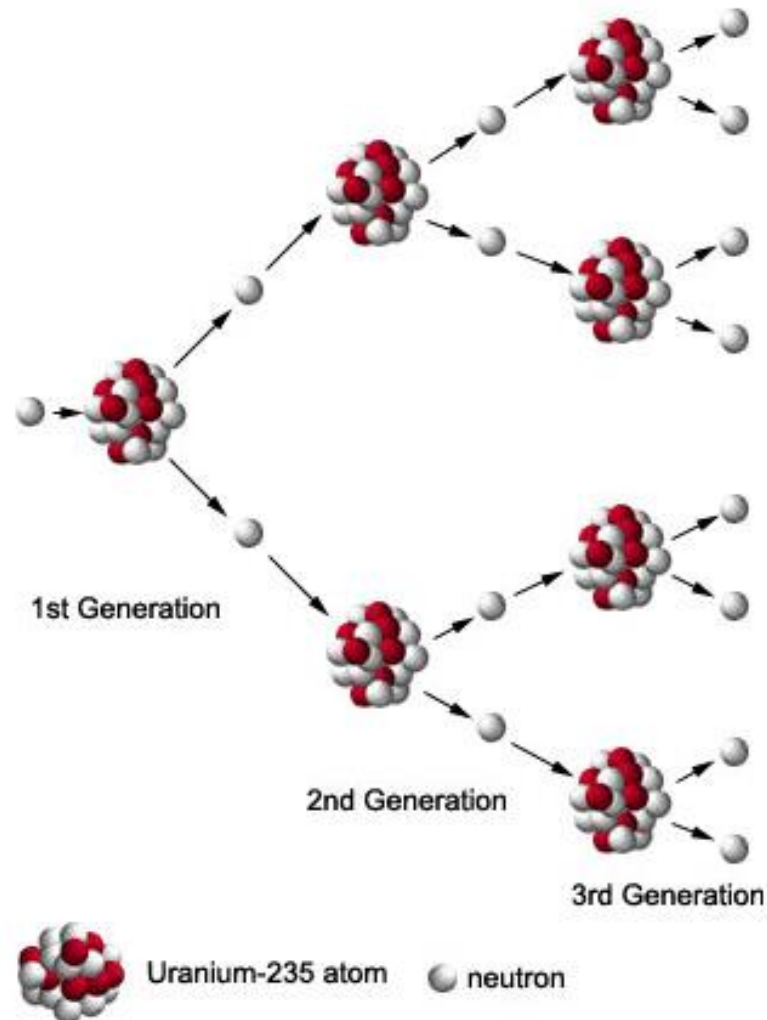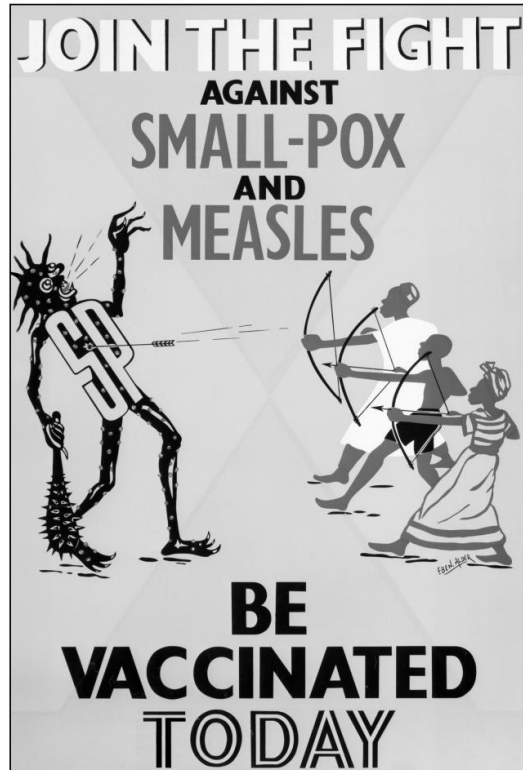
R = # of new infections/infectious individual

ERADICATE SMALL POX

Dr. Doctor Schna- bel von Rom

JOIN THE FIGHT
AGAINST
SMALL-POX
AND
MEASLES
SP
BE
VACCINATED
TODAY

ORGANIZATION OF AFRICAN UNITY
RINDERPEST CAMPAIGN
KAMPALA 4 30PM 10 AU
70c
TANZANIA UGANDA KENYA
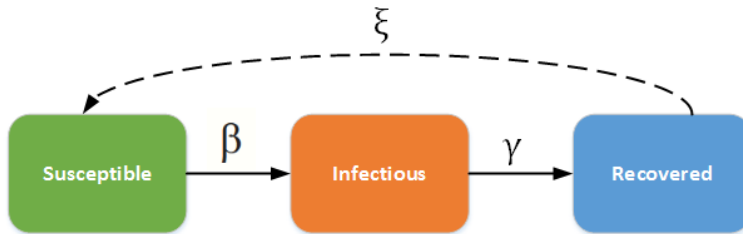

ORGANIZATION OF AFRICAN UNITY
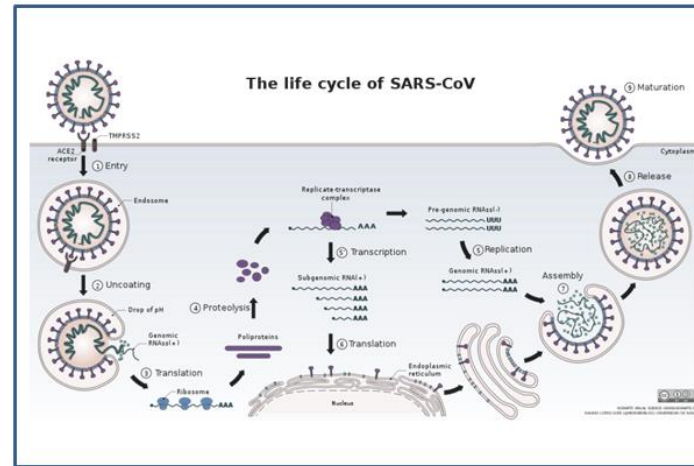RINDERPEST CAMPAIGN
14 AU
30c
TANZANIA UGANDA KENYA
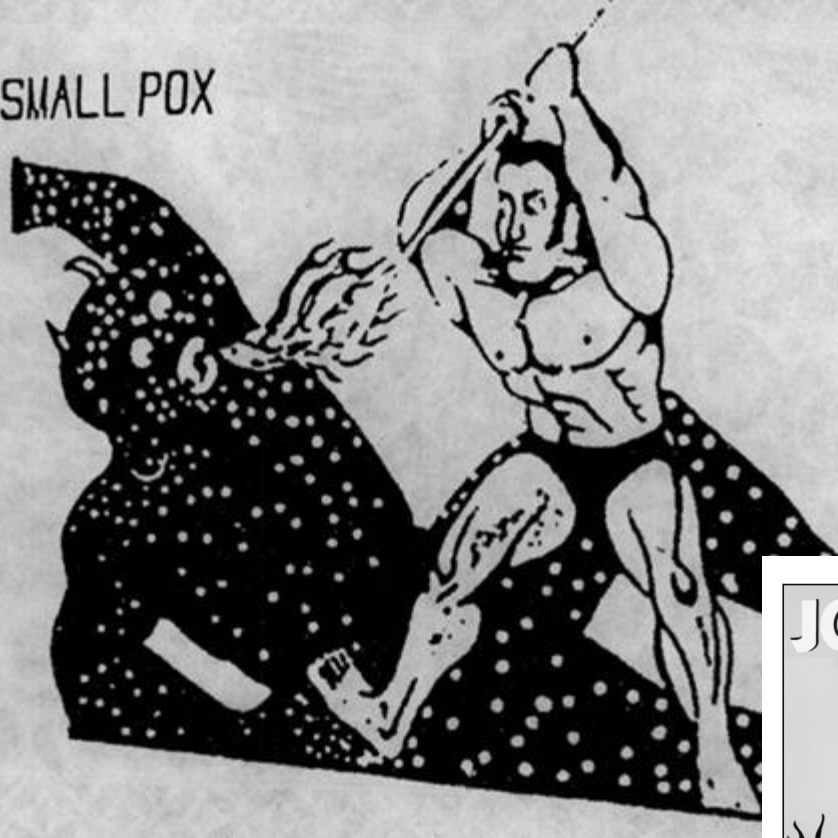
Modeling COVID at LANL
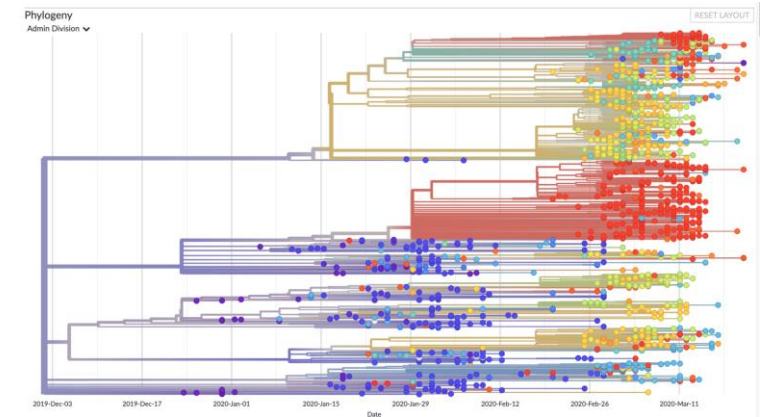
Population infection models

Makes prediction of # cases,
Hospital use, school closures, etc..

Within host models

Therapeutics

Virus evolution model

Vaccine design